



U74HC540

CMOS IC

OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS

DESCRIPTION

The U74HC540 combines with octal buffers and line drivers with inverting 3-state outputs. The 3-state output is controlled by output enable inputs $\overline{OE1}$ and $\overline{OE2}$, all eight outputs will be in high-impedance when either of the 2 inputs is applied with high voltage.

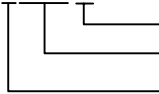
FEATURES

- * Operation voltage range: 2V ~ 6V
- * High-current 3-state outputs for bus driver
- * Inverting outputs

ORDERING INFORMATION

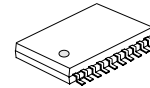
Ordering Number		Package	Packing
Normal	Lead Free Plating		
U74HC540-P20-R	U74HC540L-P20-R	TSSOP-20	Tape Reel
U74HC540-P20-T	U74HC540L-P20-T	TSSOP-20	Tube

U74HC540L-P20-R



- (1) Packing Type
- (2) Package Type
- (3) Lead Plating

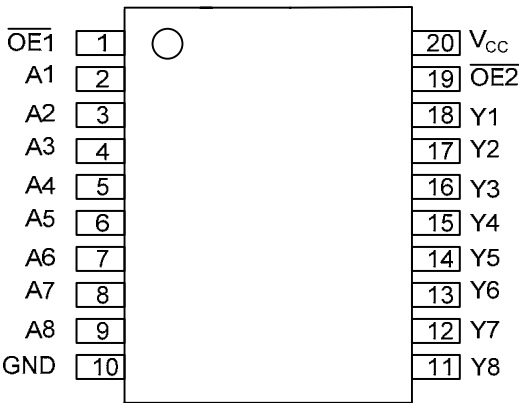
- (1) R: Tape Reel, T: Tube
- (2) P20: TSSOP-20
- (3) L: Lead Free Plating, Blank: Pb/Sn



TSSOP-20

*Pb-free plating product number:
U74HC540L

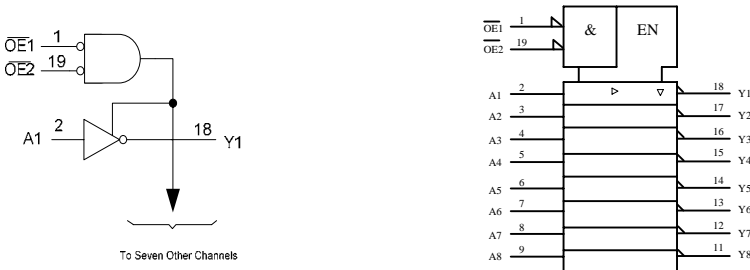
PIN CONFIGURATION



FUNCTION TABLE (each gate)

INPUT			OUTPUT
$\overline{OE1}$	$\overline{OE2}$	A	Y
L	L	L	H
L	L	H	L
H	X	X	Z
X	H	X	Z

LOGIC DIAGRAM (positive logic)



■ ABSOLUTE MAXIMUM RATINGS (unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~7	V
Input Clamp Current	I_{IK}	± 20	mA
Output Clamp Current	I_{OK}	± 20	mA
Output Current	I_{OUT}	± 35	mA
V_{CC} or GND Current	I_{CC}	± 70	mA
Storage Temperature	T_{STG}	-65 ~ +150	

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	6	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R, t_F	$V_{CC}=2V$	0		1000	ns
		$V_{CC}=4.5V$	0		500	
		$V_{CC}=6V$	0		400	
Operating Temperature	T_A		-40		85	

■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A = 25$			-40~85		UNIT
			MIN	TYP	MAX	MIN	MAX	
High-Level Input Voltage	V_{IH}	$V_{CC}=2V$				1.5		V
		$V_{CC}=4.5V$				3.15		
		$V_{CC}=6V$				4.2		
Low-Level Input Voltage	V_{IL}	$V_{CC}=2V$					0.5	V
		$V_{CC}=4.5V$					1.35	
		$V_{CC}=6V$					1.8	
High-Level Output Voltage	V_{OH}	$V_{CC}=2V, I_{OH}=-20\mu A$	1.9	1.998		1.9		V
		$V_{CC}=4.5V, I_{OH}=-20\mu A$	4.4	4.499		4.4		
		$V_{CC}=6V, I_{OH}=-20\mu A$	5.9	5.999		5.9		
		$V_{CC}=4.5V, I_{OH}=-6mA$	3.98	4.3		3.84		
		$V_{CC}=6V, I_{OH}=-7.8mA$	5.48	5.8		5.34		
Low-Level Output Voltage	V_{OL}	$V_{CC}=2V, I_{OH}=20\mu A$		0.002	0.1		0.1	V
		$V_{CC}=4.5V, I_{OH}=20\mu A$		0.001	0.1		0.1	
		$V_{CC}=6V, I_{OH}=20\mu A$		0.001	0.1		0.1	
		$V_{CC}=4.5V, I_{OL}=6mA$		0.17	0.26		0.33	
		$V_{CC}=6V, I_{OL}=7.8mA$		0.15	0.26		0.33	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND		± 0.1	± 100		± 1000	nA
Output Leakage Current	$I_{O(LEAK)}$	$V_{CC}=6V, V_{OUT}=V_{CC}$ or GND		± 0.01	± 0.5		± 5	μA
Quiescent Supply Current	I_Q	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			8		80	μA
Input Capacitance	C_{IN}	$V_{CC}=2V\sim 6V$		3	10		10	pF

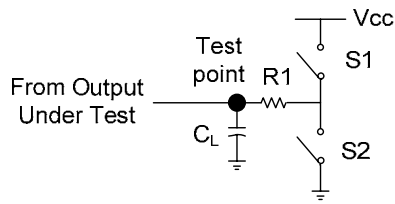
■ SWITCHING CHARACTERISTICS ($t_R, t_F \leq 3\text{ns}$)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25$			-40~85		UNIT
			MIN	TYP	MAX	MIN	MAX	
Propagation delay from input (A) to output(Y)	t_{PLH}/t_{PHL}	$V_{CC}=2V, C_L=50\text{ pF}$		35	100		125	ns
		$V_{CC}=2V, C_L=150\text{ pF}$		60	150		188	
		$V_{CC}=4.5V, C_L=50\text{ pF}$		10	20		25	
		$V_{CC}=4.5V, C_L=150\text{ pF}$		15	30		38	
		$V_{CC}=6V, C_L=50\text{ pF}$		8	17		21	
		$V_{CC}=6V, C_L=150\text{ pF}$		13	26		32	
3-state output enable time from \overline{OE} to Y_n	t_{PZH}/t_{PZL}	$V_{CC}=2V, C_L=50\text{ pF}$		75	150		188	ns
		$V_{CC}=2V, C_L=150\text{ pF}$		100	200		250	
		$V_{CC}=4.5V, C_L=50\text{ pF}$		15	30		38	
		$V_{CC}=4.5V, C_L=150\text{ pF}$		20	40		50	
		$V_{CC}=6V, C_L=50\text{ pF}$		13	26		32	
		$V_{CC}=6V, C_L=150\text{ pF}$		17	34		43	
3-state output disable time from \overline{OE} to Y_n	t_{PHZ}/t_{PLZ}	$V_{CC}=2V, C_L=50\text{ pF}$		40	150		188	ns
		$V_{CC}=4.5V, C_L=50\text{ pF}$		18	30		38	
		$V_{CC}=6V, C_L=50\text{ pF}$		17	26		32	

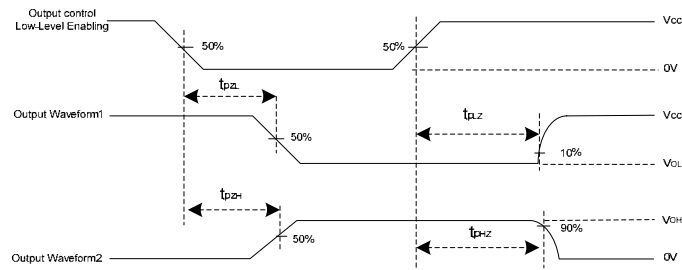
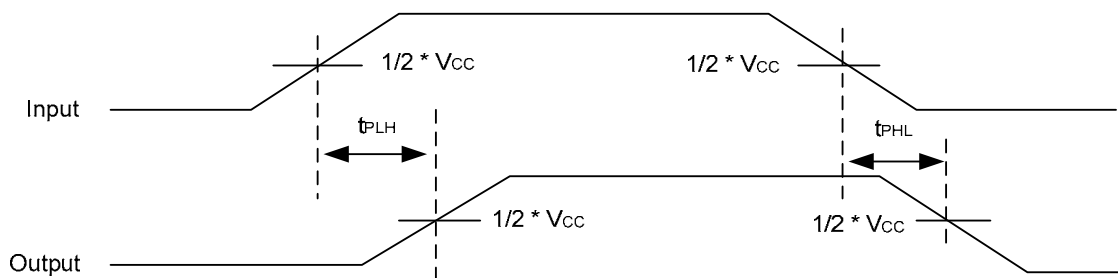
■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	Cpd	No load, $f=1\text{MHz}$		35		pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.



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